

S/179/60/000/03/006/039
E081/E441

Stresses in a Ponderable Half-Plane, Weakened by Two Circular
Non-Symmetrically Located Holes

problem is attacked by means of the complex Kolosov - Muskhelishvili potentials $\varphi_1(z)$ and $\psi_1(z)$ and the solution is found to depend on the quantities α_n and β_n (Eq (4.2) and (4.7)). These quantities are given in Table 1, in which the first line represents calculations obtained by solving Eq (4.2) and the second line represents calculations obtained from Eq (4.7). The supplementary stresses at some important points for $\theta = 0, \pi/4$ and $\pi/2$ are given by the formulae immediately above Table 2, which itself gives the values of the coefficients in these equations (h_1 and h_2 are given by Eq (2.2); Tables 1 and 2 assume that $R_1 = 10 R_2$, $C = 13 R_2 e^{9i}$). There are 1 figure, 2 tables and 3 Soviet references.

ASSOCIATION: Institut mekhaniki AN SSSR (Institute of Mechanics, AS USSR)

SUBMITTED: January 20, 1960

Card 2/2

✓C

KISLER, L.N. (Moskva)

Determining a stressed area in a ponderable semiplane with elliptic
and circular holes. Izv.AN SSSR.Otd.tekh.nauk.Mekh.i mashinostr.
no.2:159-163 Mr-Ap '61. (MIRA 14:4)
(Strains and stresses)

KISLER, L. N., Cand. Phys-Math. Sci. (diss) "On Intensities in Weighable Semi-Plane, Weakened by Two Circular Openings, and Circular and Elliptical Openings." Rostov-on-Don, 1961, 7 pp (Rostov State Univ.) 175 copies (KL Supp 12-61, 251).

KISLER, L.N.; MATVIYENKO, V.V.; DOLGIKH, M.A.

Estimating the stability of leaching chambers of rectangular
cross section. Trudy VNIIST no.12:112-121 '62. (MIRA 16:11)

RUPPENEYT, K.V.; KISLER, L.N.

Working out the engineering theory of rock pressure. Vop. gor. davl.
no.18:3-22 '63. (MIRA 18:7)

KISLER, V.M. (Moskva)

On the problem pertaining to an explosion over the surface of
a liquid. Prikl.mat.i mekh. 24 no.3:496-503 My-Je '60.

(MIRA 13:10)

(Explosions) (Hydrodynamics)

KISLER, V. M., Cand. Phys-Math. Sci. (diss) "On the Problem of
Explosion Over the Surface of a Liquid." Moscow, 1961, 6 pp
(Moscow Hydrophysical Institute, Acad. of Sci. USSR) (KL Supp
12-61, 251).

KONSTANTINOV, B.P.; KISLEV, B.P.; SKREBTSOV, G.P.

Separation of radium from barium on a mercury cathode by electrolysis.
Radiokhimiia 2 no.1:50-56 '60. (MIRA 14:5)
(Radium) (Barium)

WISLEV, V. I.

Hoists for deep mines Moskva, Gos. nauch-no-tekhn. izd-vo lit-ry po chernoi i
tsvetnoi metallurgii, 1954. (Mic 55-3435)

Collation of the original, as determined from the film: 227 p.

Microfilm Slavic 372 AC

PIOLINA, V. E.

5864 Detskaya. kuhnya kniga dlya materей O prigotovlenii pishchi detyam.
red red. v.s. vayl'. (s izm. idop) chkalov, kn. ozd., 1954. 1685 20sm.
30.000ekz. 2r. 55k. (55-930) 613.95; 613.22-641.562

SQ: Knizhnaya Letopis', vol. 1, 1955

KISLEVA, Z. N.

S/179/60/000/02/023/032
E191/E281

AUTHOR: Kisleva, Z. N. (Moscow)

TITLE: On the Propagation of Small Disturbances in a Plane Nozzle

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1960, Nr 2, pp 141-144 (USSR)

ABSTRACT: A method of correcting the profile of the smoothing section in a plane supersonic nozzle is presented, starting with a given distribution of pressure along the axis of the diamond pattern of measuring points. The deviations of the Mach number from the design Mach number along the axis of the diamond are derived, starting from given deviations of the profile from the theoretical profile. In constructing a nozzle, there are in practice always deviations from the theoretical profile which cause the flow at the nozzle exit to become non-uniform. Apart from manufacturing errors, the nozzle profile can also have errors due to approximations in computing the corrections required for the boundary layer. It is assumed that the flow in the nozzle is two-dimensional, irrotational and in a steady state condition. As a result of the

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B

KISLEVSKIY, L.I. [Kysel's'kiy, L.I.]

Mechanism underlying the outflow of matter from the anode
and cathode of an arc of constant polarity. Ukr.fiz.zhur.
6 no.6:878-881 N-D '61. (MIRA 16:5)

1. Institut fiziki AN Belorusskoy SSR, Minsk,
(Electric arc)

KISLEYKO, A., agronom

Machines have come to the sugar beet fields. Zemledelie 25 no.
10:57 0 '63. (MIRA 16:11)

1. Kolkhoz "Bol'shevik" Syislochskogo proizvodstvennogo uprav-
leniya, Gomei'skoy oblasti.

KISLIAKOV, Sava, inzh.

Theory of symmetrical integral equations. Godisznik Inzh
stroit inst 14 no.11:1-8 '62. [publ. '63]

KISLIAKOV, Sava, D.

Nonlinear dynamic stability of rectangular plates with initial irregularity. Godishnik Inzh stroit inst 15 no.1:11-25 '62. [publ.'63.]

KISLIAKOV, Sava, inzh.

Stability of thin prismatic films. Godishnik Inzh stroit inst
13 no.1:57-71 '61.

KISLIAKOV, Sava P., inzh., k.t.n.

Dynamic stability of cylindrical shells with or without
initial bending. Godishnik Inzh stroit inst 16 no.1:
123-136 '64.

Stability of rectangular plates with initial bending in a gas
flow at high supersonic speeds. Ibid.:165-177

KISLIBSYNA-L.P.

✓ Mechanism of the exchange of adsorbed hydrogen ions by aluminum ions in soils. V. A. Chernov and L. P. Kislibsyna (*Pochvovedenie*, 1955, No. 3, 7-10).—Krasnozems and sod-podzolized soils were treated alternately with 0.05N-HCl and N-KCl. The KCl extracts of acid-treated soils all contained H^+ and Al^{+++} , but the ratio of these ions depended on the soil type, the horizon within a given profile and on the interval between the acid and the saline extractions, replacement of H^+ by Al^{+++} on the soil particles increasing with the interval. Repeated alternate treatments did not alter the exchange capacity of the two upper horizons of the podzols but increased the capacity of the krasnozems, probably by extracting basic forms of the sesquioxides.

SOILS & FERT. (A. G. P.).

KISLICHENKO, Yu.V. [Kysalychenko, IU.V.] arkhitektor

The third subway. Znan. ta pratsia no. 12:6-7 D '60. (MIRA 14:4)

1. Kievmetrobud.
(Kiev—Subways)

KISLIK, D. A.

DECEASED

25652. KISLIK, D. A. O sluchayakh nepravil'nogo konstruirvaniya registriruyushchego mekhanizma v mashinakh po ispytaniyu materialov s mayatnikovym silom ameriem. Izvestiya Rost. in-ta. inzhenerov sh-d. transporta, vyp 14, 1949 s. 97-100.

SO: Letopis' Zhurnal' Nykh Statey, Vol. 34, Moskva, 1949.

KISLIK, D.A., kand.tekhn.nauk, dotsent [deceased]; KARMAZIN, A.I., kand.
tekhn.nauk, dotsent

Laboratory equipment for studying the torsion of thin-walled rods
with an open profile. Izv.vys.ucheb.zav.; mashinostr. no.6:129-132
'62. (MIRA 15:11)

1. Rostovskiy institut inzhenerov zheleznodorozhnogo transporta.
(Testing machines)

KISLIK, D.A., kand. tekhn. nauk, dotsent [deceased]

Stresses and offsets in the elements of the superstructure.
Sbor. nauch. trud. RIIZHT no.40:5-61 '63.

(MIRA 18:3)

KISLER, G.I.

USSR.

Combined hydro-dehydropolymerization with boron fluoride on platinum and chromium catalysts. Ya. M. Pauskhin and G. I. Kislik. *Doklady Akad. Nauk S.S.S.R.* 90, 857-9 (1959). Hydro-dehydropolymerization was studied on Pt and Cr catalysts covered by a layer of BF_3 , the latter acting as a polymerization catalyst. The reactions were carried on with isomylene and isobutylene at different temps. and with different catalysts (Pt-carbon with and without BF_3 , C + BF_3 , BF_3 + Cr_2O_3 , Al_2O_3 , and Cr_2O_3 , Al_2O_3). A study of the phys. consts. of the polymers formed shows that increase in temp. decreases the degree of polymerization and decreases the mol. wt. of the polymers. The Pt-carbon catalyst did not yield any polymerization and the conversion of the olefin on C + BF_3 was only 66%, as compared to 90% for Pt-carbon + BF_3 . The polymers formed with the latter catalyst contain aromatic compds. Polymers obtained with catalysts contg. BF_3 had decreased degree of unsat. as the temp. was increased. There is a combined polymerization, cyclization, and hydrogenation reaction at 400° in the presence of platinalized carbon and BF_3 .

J. Rovtar Lench

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KISLIK, G. N.

1452. Combined hydro-dehydropolymerization by boron fluor-

de os plasmam and thymidum plasmam

... indicate that P1 encodes a H₂ ...
... generation. V. B.

KISLIK, M.D

PHASE I BOOK EXPLOITATION

SOV/4281

Akademiya nauk SSSR

Izvestiennyye sputniki zemli, vyp. 4 (Artificial Earth Satellites, No. 4)
Moscow, 1960. 205 p. Errata slip inserted. 6,500 copies printed.

Resp. Ed.: L.V. Kurnosova; Ed. of Publishing House: M.I. Fradkin; Tech. Ed.:
T.P. Polenova.

PURPOSE: This collection of articles is intended to disseminate data collected
in investigations performed by means of artificial earth satellites.

COVERAGE: The collection consists of 15 articles dealing with scientific data on
Soviet artificial earth satellites (AES) and cosmic rockets. The topics dis-
cussed include measurements of the density of the upper atmosphere, motion of
AES, measurements of micrometeorites and meteoric matter, magnetometric measure-
ments of cosmic rays, electrical potential, and spectrum of positive ions. The
collection is part of a series published regularly. References follow each
article.

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Artificial Earth Satellites, No. 4

SOV/4281

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The study of the motion of the AES is made without taking the resistance of air into account. The results obtained can be used for the calculation of orbits of high flying satellites and also for the qualitative analysis of the influence of the contraction of the earth on the motion of satellites.	
<u>El'yasberg, P.Ye., and V.D. Yastrebov.</u> Determination of the Density of the Upper Atmosphere According to the Results of Flight Observations of the Third Soviet AES	18
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KISLIK, M.D.

Analysis of the integrals of motion equations for an artificial
satellite in the normal gravitational field of the earth. Isk.
sput.Zem. no.13:23-52 '62. (MIRA 15:7)
(Artificial satellites--Orbits)

KOTEL'NIKOV, V.A., akademik; DUBROVIN, V.M.; KISLIK, M.D.; KORENBERG, Ye.B.;
MINASHIN, V.P.; MOROZOV, V.A.; NIKITSKIY, N.I.; PETROV, G.M.;
RZHIGA, O.N.; SHAKHOVSKOY, A.M.

Radar observation of Venus. Dokl. AN SSSR 145 no.5:1035-1038
'62. (MIRA 15:8)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Radio astronomy) (Venus (Planet))

KOTEL'NIKOV, V. A., akademik; GUS'KOV, G. Ya.; DUBROVIN, V. M.;
DUBINSKIY, B. A.; KISLIK, M. D.; KORENBERG, Ye. B.; MINASHIN,
V. P.; MOROZOV, V. A.; NIKITSKIY, N. I.; PETROV, G. M.;
PODOPRIGORA, G. A.; RZHIGA, O. N.; FRANTSesson, A. V.;
SHAKHOVSKOY, A. M.

Radar tracking of the planet Mercury. Dokl. AN SSSR 147 no. 6:
1320-1323 D '62. (MIRA 16:1)

1. Institut radiotekhniki i elektroniki AN SSSR.

(Mercury(Planet)) (Radar in astronomy)

L 15707-63

EWI(1)/FBD/FGC(w)/BDS/ES(v)/EEG-2 AFFTC/ESD-3 P1-4/Pe-4
8/2560/63/000/017/0101/0106 GW/PT-2

ACCESSION NR: AT3007034

AUTHOR: Kotel'nikov, V. A.; Dubinskiy, B. A.; Kislik, M. D.; Tsvetkov, D. M.

TITLE: Precise determination of the astronomical unit based on radar returns from Venus in 1961

SOURCE: AN SSSR. Iskusst. sputniki zemli, no. 17, 1963, 101-106

TOPIC TAGS: astronomical unit, Venus, Venus probe, Venus radar echo, Venus radar signal, Venus radar return

ABSTRACT: A revised value for the astronomical unit (A) is arrived at from calculations on the basis of radar returns from Venus in April 1961. The radar measurements were conducted by the Institut radiotekhniki i elektroniki, AN SSSR (Institute of Radio Engineering and Electronics, Academy of Sciences SSSR) and yielded a more accurate value of A than previously obtained from Venus radar echoes in 1958 and 1959 because of the higher transmitting power [not specified] that was used. The measurement method is also superior to that using orbital data from an artificial satellite such as Pioneer V, since the ephemeris of the satellite is not known as accurately as that of Venus. Values of A calculated on the basis of signal round-trip time were found to be more accurate than those

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L 15707-63

ACCESSION NR: AT3007034

8/2560/63/000/017/0101/0106

calculated from Doppler-shift data. The mean value for A was determined to be 149,599,300 km, based on signal return times for 89 measurement periods between 18 and 26 April 1961. This figure includes an rms error of ± 330 km due to the uncertainty in measuring elapsed signal time. Additional systematic errors, which include the uncertainties of Venus' radius, of the speed of light in a vacuum, and of the actual location of the signal reflecting surface on Venus, and the inherent delay in the receiving system, must also be considered. This results in an overall calculated rms error of ± 2000 km. Comparison of the Soviet figure to three other values of A reported in the U. S. and Great Britain based on Venus radar echoes in 1961 show that all four nominal values of A lie within 2300 km of each other. Orig. art. has: 3 figures and 3 formulas.

ASSOCIATION: none

SUBMITTED: 23Aug62

DATE ACQ: 11Oct63

ENCL: 00

SUB CODE: AS

NO REF SOV: 003

OTHER: 005

Cord 2/2

L 12933-63

EW(1)/FBD/FCC(w)/BDS/EEC-2/EED-2/ES(v)

AFFTC/AFMDC/APGC/ASD/

ESD-3 Pe-l/Pi-l/Pj-l/Pk-l/Pl-l/Pm-l PT-2/GW/WR

ACCESSION NR: AP3003845

S/0020/63/151/003/0532/0535

117
102

AUTHOR: Kotel'nikov, V. A. (Academician); Dubrovin, V. M.; Dubinskiy, B. A.;
Kislak, M. D.; Kuznetsov, B. I.; Lishin, I. V.; Morozov, V. A.; Petrov, G. M.;
Rzhiga, O. N.; Sy*tsko, G. A.; Shakhovskoy, A. M.

TITLE: Radar observations¹² of Venus²⁴ in the Soviet Union in 1962

SOURCE: AN SSSR. Doklady, v. 151, no. 3, 1963, 532-535

TOPIC TAGS: radar observation, Venus observation, average reflected signal spectrum, reflection coefficient, broadband component, frequency-modulated reflected signal, reflected signal envelope, noise envelope

ABSTRACT: From 20 October to 21 December 1962, radar observations of Venus were made, each of a duration of 4.5 to 7 min. The radar employed was the same used in 1961 observations but with its sensitivity improved by a factor of 6 by means of a paramagnetic ruby amplifier placed at the receiver input and through an increase in transmitter power. In order to eliminate the average noise level in the received signal, the frequency of the transmitted signal was shifted 62.5 cps every 4.096 sec. The frequency spectrum of the reflected signals was recorded on magnetic tape and investigated by means of a 20-channel analyzer. The average

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ACCESSION NR: AP3003845

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spectrum of reflected signals plotted on the basis of the sum of measurements at both frequencies radiated by the transmitter is shown in Fig. 1a of Enclosure. The spectrum was analyzed by filters with a passband of 1 cps. The frequency values of analyzer filter tunings f in relation to the frequency of central filter f_0 are plotted along the abscissa, while value p , representing the ratio of reflected signal power in each filter band to the signal power in the central filter band, is plotted along the ordinate. Dotted lines show the RMS value of measurement errors caused by noise. Except for the central filter, which yields a higher signal level, the reflected signal spectrum may be approximated by the exponential function

$$p = 0.37 \exp (-0.42 |f - f_0|).$$

The reflection coefficient of Venus measured on the basis of reflected signal energy within 20 cps varied during the two-month period between 12 and 18%. In the 1-cps band reflected energy was lower than total energy by a factor of 2.5 to 3. The spectrum of the broadband component of the reflected signal observed previously was also observed. Here the transmitted signal consisted of constant periodic transmissions whose frequencies differed from each other by 2000 cps and whose duration was 4.096 sec. The analyzer filter passband was 100 cps. The measurements showed a strong probability of the presence of the broadband component

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in the 300-cps band. The average spectrum of frequency-modulated reflected signals which was analyzed by filters with passbands of 1 and 4 cps is shown in Fig. 1b. The same quantities as in Fig. 1a are plotted along the coordinate axes, and range axis ΔR is indicated under the assumption that the spectrum maximum corresponds to reflection at a point situated at the shortest distance from Earth in the center of the visible disk of Venus. The data of Fig. 1b may be approximated by the hyperbola

$$p = 0.625 (f - f_0 + 0.625)^{-1}.$$

Fig. 2a shows the diagram of the envelope of the reflected signal obtained on 24 November 1962 during a 4.5-min study of the unmodulated carrier. The receiving channel passband was 6 cps before the linear detector, and the integrating circuit time constant was 6 sec after it. For comparison, Fig. 2b shows the noise envelope diagram for an analogous channel shifted in frequency by 62.5 cps containing no signal. "The authors thank the following persons for their assistance: L. V. Apraksin, R. S. Bondarenko, V. O. Voytov, M. M. Dedlovskiy, N. M. Dmitriyev, V. S. Dovgello, V. I. Krivda, V. M. Mekhorin, G. A. Podoprigora, N. M. Sinodkin, G. I. Slobodenyuk, Z. G. Trunova, A. V. Frantsesson, and D. M. Tsvetkov."

Orig. art. has: 4 figures and 2 formulas.

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Inst. of Radio Engineering & Electronics

L 14255-63

ENT(1)/FED/FCC(w)/BDS/EEC-2/ESD-2/ES(v) AFFTC/APGO/ASD/

ESD-3 Pa-4/Pi-4/Pj-4/Pk-4/Pl-4/Pm-4 PT-2/WR

ACCESSION NR: AP3004417

8/0020/63/151/004/0811/0814

AUTHOR: Kotel'nikov, V. A.; Dubrovin, V. M.; Dubinskii, B. A.; Kislak, M. P.;
Kuznetsov, B. I.; Petrov, G. M.; Rabotynov, A. P.; Rzhiga, O. M.; Shakhovskoy,
A. M.

TITLE: Radar observations of the planet Mars in the Soviet Union

SOURCE: AN SSSR. Doklady*, v. 151, no. 4, 1963, 811-814

TOPIC TAGS: Mars radar observations, Mars reflected-signal spectrum, Mars Doppler-frequency shift, Mars rotation time, Mars reflection coefficient

ABSTRACT: Radar observations of Mars' northern hemisphere from 14°30' to 14° latitude and from 310 to 360° and from 0 to 140° longitude were carried out in the Soviet Union on 6-10 February 1963 at a frequency of approximately 700 Mc. The polarization of radiated waves was circular, with antenna polarization changing to linear during reception. The energy of the signal incident on the visible surface of Mars was 1.2 w. Both transmission and reception lasted approximately 11 minutes. The signal had the shape of alternate rectangular transmissions and intervals of a duration of 4.096 sec each, at two frequencies

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ACCESSION NR: AP3004417

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differing by 62.5 cps. The signals were recorded on a magnetic tape together with a 2000-cps oscillation, which served as a scale. Receiver sensitivity was calibrated before and after operation on the basis of Cassiopeia-A discrete-source radiation. The correction for frequency shift due to the Doppler effect was regulated by an electronic digital frequency meter. In all, 99 observations were made, and the signal reflected from Mars was reliably detected on the nights of February 7-8 (28 observations) and February 8-9 (20 observations). The results of spectral analysis of these 48 observations, carried out with 4-cps filters and a storage time of 8.5 hr, are shown in Fig. 1 of the Enclosure. In the reflected signal spectrum, there is a narrowband component whose energy exceeded by 4 times the RMS measurement error caused by noise. The average reflection coefficient, determined as the ratio of the reflected-signal energy to received-signal energy under the assumption that Mars was an even, ideally conductive sphere, was found to be 7%. "The authors thank L. V. Apraksin, V. O. Voytov, M. M. Dedlovskiy, G. A. Zhurkina, A. M. Lukin, M. M. Sinodkin, B. A. Stepanov, A. V. Frantsesson, D. M. Tavetkov, and I. A. Sharabarin for their assistance." Orig. art. has: 3 figures, 1 table, and 1 formula.

Association: Inst. of Radio Engineering and Electronics

Card 2/12

KISLIK, M.D. (Moscow)

"A new definition of the spheres of influence of planets"

report presented at the 2nd All-Union Congress on Theoretical
and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

KOTEL'NIKOV, V.A., akademik; APRAKSIN, L.V.; DUBROVIN, V.M.; KISLIK,
M.D.; KUZNETSOV, B.I.; PETROV, G.M.; RZHIGA, O.N.; FRANTSESSON,
A.V.; SHAKHOVSKOY, A.M.

Radar contact with Jupiter. Dokl. AN SSSR 155 no. 5:1037-1038
Ap. '64. (MIRA 17:5)

1. Institut radiotekhniki i elektroniki AN SSSR.

ACCESSION NR: AP4034534

S/0020/64/155/005/1037/1038

AUTHOR: Kotel'nikov, V. A. (Academician); Apraksin, L. V.; Dubrovin, V. M.;
Kislik, M. D.; Kuznetsov, B. I.; Petrov, G. M.; Rzhiga, O. N.; Frantsesson,
A. V.; Shakhovskoy, A. M.

TITLE: Radar ranging of the Planet Jupiter

SOURCE: AN SSSR. Doklady*, v. 155, no. 5, 1964, 1037-1038

TOPIC TAGS: Jupiter radar ranging, Jupiter reflection coefficient, radio astronomy,
Jupiter, Doppler effect

ABSTRACT: The radar ranging of Jupiter was undertaken in order to investigate the propagation of radiowaves over long distances, and for the determination of reflecting properties of Jupiter's surface. The power received by the planet's surface was 13 w. The time for double passage of the signal was 1 hr, 6 sec, and the frequency was about 700 mc. Two consecutive signals differed by 62.5 cycles. The duration of the signals and the pauses was about 4 sec. The Doppler effect caused by the relative motion and rotation of Earth was compensated by an arrangement which linearly changed the heterodyne of the sender. The noise was

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L 21758-65 EWT(1)/EWP(m)/FS(v)-3/ENG(v)/EEC(t)/T-2/ Po-4/Pa-5/Pq-4/Pg-4/Pae-2
 AFWL/SSD(b)/SSD(c)/SSD/AFMD(c)/AFETR/APGC(f)/ESD(dp)/ESD(st)/ESD(t) GH
 ACCESSION NR: AP5000167 S/0293/64/002/006/0853/0858

AUTHOR: Kislik, M.D.

TITLE: Spheres of influence of the major planets and the moon B

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 6, 1964, 853-858

TOPIC TAGS: major planet, moon, astrophysics, planetary sphere of influence, space-
 craft trajectory, planetary gravitation

ABSTRACT: The concept of the sphere of action of a small body relative to a large body, such as a planet relative to the sun, has been described by Subbotin (Kurs nebesnoy mekhaniki, vol. 2, ONTI, 1937). The radii of the spheres of action of the major planets are given in Table 1 of the Enclosure. In this paper the author introduces the concept of sphere of influence of a small body relative to a large one. It is shown that the use of spheres of influence in place of spheres of action in approximate computations of the trajectories of artificial celestial bodies leads to an increase in accuracy. Radii of the computed spheres of influence are also shown in Table 1 of the Enclosure. The author describes fully the method for determining spheres of influence. Comparison of the data on spheres of action and influence shows that the extent of the spheres of influence of the planets is 2 or 3

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ACCESSION NR: AP5000167

times greater than the spheres of action. In fact, this ratio is given by

$$\frac{r_{inf}}{r_{act}} = \frac{1.15}{\sqrt{m_2/m_1}}$$

"The author wishes to thank B.A. Stepanov and V.T. Shamanskiy for making the necessary computations." Orig. art. has: 26 formulas, 2 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 29Apr64

ENCL: 01

SUB CODE: AA

NO REF SOV: 004

OTHER: 000

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ENCLOSURE: 01

Table 1

Planet	r_{act} , million km	r_{inf} , million km
Mercury	0.11	0.36
Venus	0.62	1.70
Earth	0.93	2.50
Mars	0.58	1.80
Jupiter	48.2	88.0
Saturn	54.5	108.0
Uranus	51.8	116.0
Neptune	86.8	194.0
Moon	66,000 km	102,000 km

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L 60859-65 EEC-4/ENG(v)/EWT(1)/FBD GW/WS-4
 ACCESSION NR: AP5018071

UR/0020/65/163/001/0050/0053

AUTHOR: Kotel'nikov, V. A.; Aleksandrov, Yu. N.; Apraksin, L. V.;
 Dubrovin, V. M.; Kislik, M. D.; Kuznetsov, B. I.; Petrov, G. M.; Pzhiga, O. N.;
 Frantsesson, A. V.; Shakovskoy, A. M.

TITLE: Radar observations of Venus in the Soviet Union in 1964

SOURCE: AN SSSR. Doklady, v. 163, no. 1, 1965, 50-53.

TOPIC TAGS: radio wave reflection, Venus radar observation, radio emission measure-
 ment, radar observation, radio astronomy

ABSTRACT: Radar observations of Venus at 40 cm were conducted between 11 and 30
 June 1964 by the Institute of Radio Engineering and Electronics of the Academy of
 Sciences USSR. Frequency modulation and periodic linear frequency modulation of
 radiated signals were employed. Paramagnetic and parametric amplifiers were used
 at the receiver output. Signal analysis was performed by means of a 20-channel
 analyzer with a filter bandwidth of 1.2 cps for each channel. The reflected
 signal spectrum and measurements of the radial velocity of the motion of Venus
 were determined on the basis of the Doppler shift of the signal spectrum of the
 central frequency in relation to the radiation frequency. Frequency manipulation

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L 60859-65

ACCESSION NR: AP5018071

was effected with the radiating signal shaped as two alternating telegraphic pulse packets at two carrier frequencies differing either by 62.5 or by 2000 cps. At each frequency, pulse duration and the intervals between transmissions were 4.096 sec. Radio wave reflection from the Venusian surface and measurements of the distance to Venus were effected with linear frequency modulation. The results of the measurements of the distance to Venus and of the radial velocity of its motion are shown in Fig. 1 of Enclosure, with the vertical sections showing rms error values, which till 23 June did not exceed 15 km for 5 min of observation (at a deviation of 4 kc) and after 23 June did not exceed 2 km (at a deviation of 32 kc). Measurement error for velocity did not exceed 2.5 cm/sec. Signal propagation time was calculated with an accuracy of ± 5 μ sec, and Doppler frequency, with an accuracy of ± 0.05 cps. The total rms error value for the initial data was ± 400 km. The energy distribution of signals reflected from Venus depending on distance ΔR is shown in Fig. 2. The following conclusions are drawn: 1) The width of the Doppler spectrum of the reflected signal caused by the rotation of Venus does not exceed 15 cps. 2) The Venusian reflection factor averages 19%. 3) The energy in the central band of 1 cps is approximately one half of the energy of the whole spectrum. 4) The orientation of the Venusian axis of rotation is practically perpendicular to the orbital plane. Orig. art. has: 4 figures. [DW]

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L 60859-65

ACCESSION NR: AP5018071

ASSOCIATION: Institut radiotekhniki i radioelektroniki Akademii nauk SSSR (In-
stitute of Radio Engineering and Electronics, Academy of Sciences SSSR)

SUBMITTED: 12Apr65

ENCL: 02

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OTHER: 000

ATD PRESS: 4063

Card 3/5

KOTEL'NIKOV, V.A., akademik; ALEKSANDROV, Yu.N.; APRAKSIN, L.V.; DUBROVIN,
V.M.; KISLIK, M.D.; KUZNETSOV, B.I.; PETROV, G.M.; RZHIGA, O.N.;
FRANTSESSON, A.V.; SHAKHOVSKOY, A.M.

Radar observations of Venus in the Soviet Union in 1964. Dokl.
AN SSSR 163 no.1:50-53 J1 '65. (MIRA 18:7)

1. Institut radiotekhniki i elektroniki AN SSSR.

PETROV, A.; KISLIK, V., instruktor

Observe labor legislation. Zdrav.Belor. 5 no.12:41 D '99.

(MIRA 13:4)

1. Tekhnicheskii inspektor Belsovprofa (for Petrov). 2. Minskiy
oblastnoy profsoyuz nedrabortnikov (for Kislik).

(WHITE RUSSIA--MEDICAL PERSONNEL)

KISLIK, V.A., doktor tekhn.nauk prof.

Review of "Seizure of metals" by A.P.Semenov. Vest.mash. 40
no.4:85-86 Ap '60. (MIRA 13:6)
(Metallography) (Semenov, A.P.)

1ST AND 2ND COLUMNS										3RD AND 4TH COLUMNS									
COMMON ELEMENTS										COMMON VARIABLES INDEX									
5										KISLIK, V. A.									
										18									
<p>Investigation of Scabs on the Surface of Railway Tyres and their Elimination. N. Shapov and V. Kislik. (Stal, 1930, No. 6, June, pp. 60-68). The investigation of 240 tyres taken out of service because of the occurrence of scabs on their surfaces showed that the formation of scabs is due to silicate slag inclusions in the shape of long branched chains. (In Russian).</p>																			
<p>ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
<p>SECTION 1</p>										<p>SECTION 2</p>									
<p>SECTION 3</p>										<p>SECTION 4</p>									

KISLIK, V. A.

"Increasing the Wear-Resistance of Cast Iron Parts of Locomotives,"
Moscow, 1944

COMMON ELEMENTS										140 AND 2TH CROSS									
COMMON ELEMENTS										140 AND 2TH CROSS									
<p><i>ca</i> KISLIK, V. A.</p>										<p>PROCESSES AND PROPERTIES INDEX</p>									
<p>Use of hardness and microhardness tests for studying surface friction. V. A. Kislik, <i>Zavodskaya Lab.</i> 13, 71-7(1947).—Steel specimens were subjected to sliding friction (without lubrication) and examd. for microhardness at depths up to 100 μ from the surface. Steel with a ferrite-pearlite structure having a low C content showed progressive increase in hardness from the core to the surface due to cold work. In martensitic steel the hardness at the surface decreased due to annealing by the heat of friction. In steel with a ferrite-pearlite structure having a high C content, max. hardness was obtained at a depth of 12 μ as a result of heating above the crit. temp. followed by rapid cooling.</p>										<p>9</p>									
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>										<p>COMMON VARIANTS INDEX</p>									
<p>100000 #1</p>										<p>100000 #1</p>									
<p>100000 #1</p>										<p>100000 #1</p>									

KISLIK, V.A.

KISLIK, V.A., kandidat tekhnicheskikh nauk; LARIN, T.V., kandidat tekhnicheskikh nauk

Wear on locomotive wheelbands by shaped brake shoes. Tekh.zhel.
dor.7 no.6:26-27 Je'48. (MLRA 8:11)
(Wheels)

KISLIK, V.A., DEVIATKIN, V.P..

Investigating the formation of abscesses on seamless rolled and band
railroad wheels. Tren. i izn. mash. no.7:205-222 '53. (MLRA 9:9)
(Wheels)

KISLIK, V.A.; SAMOYLENKO, A.M.

Method for testing abrasive wear of parts of boiler furnaces. Zav.
lab. 22 no.5:581-583 '56. (MIRA 9:8)

1. Rostovskiy-na-Donu institut inzhenerov zheleznodorozhnogo
transporta.

(Abrasion) (Furnaces)

Kisluk, V. A.

Distr: hE2c

Method of Testing Steam Boiler and Furnace Steels. V. A. Kisluk and V. N. Tkachenko. (Zavodskaya Laboratoriya, 1956, 22, (12), 1452-1486). [In Russian]. Four series of tests are described in a specially constructed boiler, in order to elucidate the corrosion processes and to discover means for their elimination. The chemical composition of the boiler water has been qualitatively changed for three series of experiments dealing with the corroding effects on the protective oxide film of the metals, and a fourth series of tests dealt with the friction effects of overlapping surfaces. Some definite conclusions emerged from the findings. — r. n.

18

3

1

11

18

KISLIK, V.A., professor (Rostov-na-Donu); KARMAZIN, A.I., kandidat
tekhnicheskikh nauk (Rostov-na-Donu).

Selecting steel for pairs of car wheels. Shel. dor. transp.
38 no.8:24-26 Ag '56. (MIRA 9:10)

(Wheels)

KISLIK, V.A., prof.; KOVALEV, M.P., kand.tekhn.nauk; KRASNICHENKO, L.V.;
DOMBROVSKIY, K.I., kand.tekhn.nauk.

London conference on lubrication and wear. Izv. vys. ucheb. zav.;
mashinostr. no.1:147-151 '58. (MIRA 11:6)
(London--Lubrication and lubricants--Congresses)
(London--Mechanical wear--Congresses)

KISLIK, V.A., doktor tekhn. nauk, prof.; KARMAZIN, A.I., kand. tekhn. nauk,
dots.

Wear and damage to rolling surfaces of freight-car wheels. Trudy
RIIZHT no.23:5-169 '58. (MIRA 11:6)
(Car wheels) (Mechanical wear)

KISLIK, V.A., doktor tekhn. nauk, prof.; TKACHEV, V.N., inzh.

~~Local corrosion of metal in steam locomotive boilers. Trudy RIKHT~~
no.23:170-216 '58. (MIRA 11:6)

(Locomotive boilers—Corrosion)

KISLIK, V.A., doktor tekhn. nauk, prof.; SAMOYLENKO, A.M., inzh.

Wear of parts of steam locomotive fireboxes caused by flow of
coal and ash particles. Trudy RIZHT no.23:217-246 '58.

(Locomotive--Fireboxes) (Mechanical wear) (MIRA 11:6)

18(7); 25(1)

PHASE I BOOK EXPLOITATION

SOV/3232

Kislik, Vladislav Afanas'yevich, Doctor of Technical Sciences, Professor; Aleksandr Filippovich Troitskiy, Doctor of Technical Sciences, Professor; Dmitriy Grigor'yevich Ivannikov, Doctor of Technical Sciences, Professor; and Mikhail Grigor'yevich Makeyev, Candidate of Technical Sciences, Docent.

Metallovedeniye i goryachaya obrabotka metallov (Physical Metallurgy and Hot Working of Metals), Moscow, Transzheldorizdat, 1959.
392 p. 10,000 copies printed.

Ed. (Title page): V. A. Kislik, Doctor of Technical Sciences, Professor; Eds. (Inside book): V. V. Danilevskiy, Candidate of Technical Sciences, and Yu. S. Sarantsev, Engineer; Tech. Ed.: P. A. Khitrov.

PURPOSE: This is a textbook for use in higher institutes of locomotive and railroad-car manufacture. It may also be used as a reference book by technical personnel at plants, depots, and track-maintenance shops connected with railroads.

Card 1/16

KISLIK, V.A., doktor tekhn. nauk; SAL'MAN, B.M., inzh.

Measuring the stresses in the rims of moving wheel pairs.
Zhel. dor. transp. 41 no.5:72-73 My '59.

(Car wheels)

(MIRA 12:7)

KISLIK, V.A.

PHASE I BOOK EXPLOITATION

SOV/5053

Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh. 3d, 1958.

Iznos i iznosostoykost'. Antifrictionnye materialy (Wear and Wear Resistance. Antifriction Materials) Moscow 1958-60 AS (Series: Its: Trudy, v. 1)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Ed.: M. M. Khrushchov, Professor; Eds. of Publishing House: M. Ya. Kabanov, and S. L. Orpik; Tech. Ed.: T. V. Polyakova.

PURPOSE: This collection of articles is intended for practicing engineers and research scientists.

COVERAGE: The collection, published by the Institut mashinovedeniya, AN SSSR (Institute of Science of Machines; Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines) which was held April 9-15, 1958. Problems discussed were in 5 main areas: 1) Fundamentals of Friction and Wear; 2) Friction and Wear (Chairman: Ye. M. Gut'yar, Doctor of Technical Sciences, and A. I. D'yachkov, Doctor of Technical Sciences); 3) Lubrication and Lubricant Materials (Chairman: G. V. Vinogradov, Doctor of Chemical Sciences); 4) Dry and Boundary Friction (Chairman: B. V. Derjagin, Corresponding Member of the Academy of Sciences USSR, and I. V. Krasitskiy, Doctor of Technical Sciences); 5) Wear and Wear Resistance (Chairman: M. M. Khrushchov, Doctor of Technical Sciences, and M. M. Khrushchov, Doctor of Technical Sciences). Chairman of the scientific assembly (on the first and last day of the conference) was Academician A. A. Blagoravov. L. Yu. Pruzhanitskiy: Candidate of Technical Sciences, was scientific secretary. The transactions of the conference were published in 3 volumes, of which the present volume is the first. This volume contains articles concerning the wear and wear resistance of antifriction materials. Among the topics covered are: modern developments in the theory and experimental science of wear resistance of materials, specific data on the wear resistance of various combinations of materials, methods for increasing the wear resistance of materials, the effects of friction and wear on the structure of materials, the mechanisms of friction and wear on the surface of various types of lubricating materials on mating, abrasive wear of a wide variety of materials and components under many different conditions, modern developments in antifriction materials, and the effects of finish machining on wear resistance. Many peculiarities are mentioned in the text. References accompany most of the articles.

Pololinto, P. Y. Influence of the Direction of Machining Marks on the Character and Magnitude of the Wear of Friction Pairs During the Period of Running-in (3b. 33SR, 1959)

270

Chestnov, A. E. Effect of the Finishing Treatment of Journal Bearings (3b. Treniya i iznos v mashinakh, v. 15, 1st. AN SSSR)

270

Zamoriatov, G. H. (deceased), A. L. Tarnovskiy, E. Y. Vakhonin, and O. A. Ryabchikova. Formation of Martensite Microstructures on the Surface of Drawn Profiled Steel Wire Used in Cables (Vestn. mashinost., No. 7, 1959)

270

Kislik, V. A. Wear and Damage to the Rolling Surface of Wheel-Rail Wheels (Vestn. mashinost., No. 7, 1959)

271

Card 11/13

7

KISLIK, V.A., prof., doktor tekhn.nauk (Rostov-na-Donu); GUGEL', S.M.,
inzh. (Rostov-na-Donu)

Use of nitriding for reconditioning fuel system components.

Elek.i tepl.tlaga. 4 no.6:26-28 Je '60. (MIRA 13:8)

(Diesel engines--Fuel systems)

(Fuel pumps--Maintenance and repair)

KISLIK, V.A., doktor tekhn.nauk, prof.; TKACHEV, V.N., kand.tekhn.nauk

"Investigating the wear of metals" by M.M.Khrushchov, M.A.Babichev.
Reviewed by V.A.Kislik, V.N.Tkachev. Vest.mash. 41 no.8:87-88
Ag '61. (MIRA 14:8)

(Mechanical wear)
(Khrushchov, M.M.) (Babichev, M.A.)

D'YACHKOV, A.K., doktor tekhn.nauk, prof.; ZHIROMIRSKIY, V.K., doktor tekhn. nauk; ~~KISLIK, V.A.~~, doktor tekhn.nauk, prof.; KRASNICHENKO, L.V., doktor tekhn. nauk, prof.; KOVALEV, M.P., kand. tekhn. nauk; PARGIN, D.P., kand. tekhn. nauk; PLUTALOVA, L.A., kand. tekhn.nauk; LETKOV, N.L., inzh.; PASHCHENKO, M.P., inzh.; PETRUSEVICH, A.I., doktor tekhn. nauk, prof.; MARENSKAYA, I.Ya., red. izd-va; UVAROV, A.F., tekhn. red.

[International conference on lubrication and wear of machinery; proceedings] Mezhdunarodnaia konferentsiia po smazke i iznosu mashin proceedings. Moskva, Mashgiz, 1962. 658 p. (MIRA 15:5)

1. Conference on Lubrication and Wear, London, 1957.
(Lubrication and lubricants--Congresses)
(Mechanical wear--Congresses)

KISLIK, V.A.

Nature of the white layer on friction surfaces. Tren.i izn.mash.
no.15:178-197 '62. (MIRA 15:4)
(Metallography)

KISLIK, V.A.; SHLYKOV, V.I.

Machine for testing specimens for wear with a reciprocating motion.

Izv. vys. ucheb. zav.; nef't' i gaz 4 no.12:109-112 '61.

(MIRA 16:12)

1. Rostovskiy institut inzhenerov zheleznodorozhnogo transporta
i Groznenskiy nef'tyanoy institut.

KISLIK, V.A., doktor tekhn.nauk, prof,; GUGEL', S.M., aspirant

Lengthening the service life of the fuel system parts of diesel locomotive engines. [Sbor.trud.] RIIZHT no.31:28-214 '61.
(MIRA 16:12)

KISLIK, V.A., doktor tekhn.nauk, prof.; STUDENOK, Yu.A., kand.fiziko-matem.nauk,
dotsent; POLYAKOV, A.N., inzh.

Increasing the wear resistance of the pistons of a D-50 diesel loco-
motive engine in the area of the upper grooves. [Sbor.trud.] RIIZHT
no.31:226-297 '61. (MIRA 16:12)

KISLIK, V.A.; KARMAZIN, A.I.

Method of evaluating the contact strength of rail steel. Zav.lab. 30
no.12:1497-1499 '64.
(MIRA 18:1)

1. Rostovskiy-na-Donu institut inzhenerov zheleznodorozhnogo transporta.

KISLIK, V.A., doktor tekhn. nauk (Rostov-na-Donu); KARMAZIN, A.I., kand.
tekhn. nauk (Rostov-na-Donu)

Prevent contact defects. Put' i put. khoz. 9 no.3:7-8 '65.
(MIRA 18:6)

KISLIK, V.A.; KARMAZIN, A.I.

Reproduction of fatigue cross fractures in rails under
laboratory conditions. Zav.lab. 31 no.3:354-356 '65.

(MIRA 18:17)

1. Rostovskiy-na-Donu institut inzhenerov zheleznodorozhnogo
transporta.

KISLIK, V.Z.

Some characteristics of local zones of substitution of the second potassium horizon of the Starobin deposit of potassium salts.

Dokl. AN BSSR 7 no.2:115-119 F '63.

(MIRA 16:7)

1. Institut geologicheskikh nauk AN BSSR. Predstavleno akademikom AN BSSR K.I. Lukashevym.

(Starobin--Potassium salts)

FOMINA, V.D.; LUPINOVICH, Yu.I.; KISLIK, V.Z.

Jointing of potassium horizons in the Starobin deposit. Dokl. AN BSSR
9 no.7:463-467 J1 '65. (MIRA 18:9)

1. Institut geologicheskikh nauk Gosudarstvennogo geologicheskogo
komiteta SSSR i Pervyy Soligorskiy kaliynyy kombinat.

KISLIK, V.Z.; LUPINOVICH, Yu.I.

Structural characteristics of the marginal zone of the 2d
potassium horizon of the Starobin deposit. Dokl. AN BSSR 8
no.11:740-744 N '64. (MIRA 18:3)

1. Institut geologicheskikh nauk Gosudarstvennogo geologicheskogo
komiteta SSSR.

LUPINOVICH, Yu.I.; KISLIK, V.Z.

Ripple marks in the rock salt of the second potassium horizon
of the Starobin deposit. Lit. i pol. iskop. no.2:174-176
Mr-Ap '65.

(MIRA 18:6)

1. Institut geologicheskikh nauk Gosudarstvennogo geologicheskogo
komiteta SSSR.

KIELAKOV, Sava, inzh.

Dynamic stability of the cylindrical films strengthened with circular ribs. Godishnik Inzh stroit' inst 13 no.1:73-90 '61.

Color centers in alkali-halide mixed crystals. A. N. Kladina. *Trudy Sibir. Fiz.-Tehn. Inst., Tomsk, USSR*, 1964, *Vol. 15*, 263-7 (1966). — F centers in mixed KCl-KBr, NaBr-KBr, and NaCl-NaBr were induced by (a) x-ray irradiation and (b) by Aitseyayev's method (cathode electrons at high temp. followed by rapid cooling to room temp.). The latter method was difficult. Cracks developed so that exptl. sections could not always be cut out of the grown crystal. In NaBr-KBr and NaCl-NaBr F centers could not always be induced by either method. This was ascribed to a white enamel formed on the surface of the crystals. The single F band of mixed crystals in the KCl-KBr system was not like that of KCl or KBr crystals. It shifted towards that of KBr as the concn. of the latter increased. The absorption spectra of crystals treated by a shifted by 20 mμ to the right of that of crystals treated by a. This was ascribed to the presence of colloidal dispersions in the former because cooling was not sufficiently rapid. The relation between the crystal lattice constants and the concn. of mixed crystals in systems KCl-KBr and KBr-NaBr did not follow Vegard's law, but the relation $r_{\text{max}} \propto \nu^{-1}$ const. was valid. ν is the vibration frequency. 1-R.

SOV/112-58-2-1851

Translation from: Referativnyy zhurnal, Elektrotehnika, 1958, Nr 2, p 8 (USSR)

AUTHOR: Kislina, A. N.

TITLE: Connection Between the Electric Strength of Solid-Solution Single Crystals of Alkali Halides and Some of Their Physico-Chemical Characteristics
(Svyaz' elektricheskoy prochnosti monokristallov tverdykh rastvorov
shchelочно-galoidnykh soley s nekotorymi fiziko-khimicheskimi svoystvami)

PERIODICAL: Izv. Tomskogo politekhn. in-ta, 1956, Vol 91, pp 125-135

ABSTRACT: The structure of single crystals of solid solutions of alkali halides was studied by x-rays, and measurements made of lattice constant, electric strength, and microhardness. An attempt is made to discover associations among the above characteristics and also connection between the electric strength of solid solutions and their melting temperature, formation heat, and surface energy. Bibliography: 16 items. Tomskiy politekhnich. in-t (Tomsk Polytechnic Institute), Tomsk.

A.A.V.

Card 1/1

SOV/112-58-2-1852

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1958, Nr 2, pp 8-9 (USSR)

AUTHOR: Kislina, A. N.

TITLE: Aging Changes in Electric Strength, Microhardness, Flowing Pressure, and Formation Heat of Solid Solutions of Some Alkali Halides (Izmeneniye elektricheskoy prochnosti, mikrotverdosti, davleniya istecheniya i teploty obrazovaniya tverdykh rastvorov nekotorykh shchelochno-galoidnykh soley pri ikh starenii)

PERIODICAL: Izv. Tomskogo politekhn. in-ta, 1956, Vol 91, pp 137-144

ABSTRACT: An increase in electric strength and microhardness has been discovered in single crystals of KCl-KBr and KBr-NaBr solid solutions in the course of natural aging. The electric strength of fresh single crystals of KCl-KBr can be expressed by a curve that has a minimum, that of crystals shelved for 3 months, by a curve that has a maximum; for equimolar hard solutions, the electric strength of aged samples is higher than that of fresh samples. Samples shelved for 3 months show maximum values of micro-

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SOY/112-58-2-1852

Aging Changes in Electric Strength, Microhardness, Flowing Pressure, and
hardness. Calcining of mixed crystals KCl-KBr at 300° and 500°C results in
an increase in their electric strength. Bibliography: 12 items. Tomskiy
politekhnich. in-t (Tomsk Polytechnic Institute), Tomsk.

A.A.V.

Card 2/2

KISLINA, A. N. Cand Tech Sci -- (diss) "^{Certain} Study of ~~Some~~ Physical-
Chemical Properties of ~~the~~ Solid Solutions of Alkali-Halogen Salts
and Their Changes During Aging." Tomsk, 1957. 7 pp 20 cm. (Min
of Higher Education USSR, Tomsk Order of Labor Red Banner
Polytechnic Inst in S. M. Kirow), 100 copies (KL, 17- 57, 97)

KISLINA, A. N., (TPI)

"The simple relations between the physical and chemical properties of the monocrystals of alkali-halide salts and their electrical strength are not always established in the case of solid solutions"

Report presented at a Conference on Solid Dielectrics and Semiconductors,
Tomsk Polytechnical Inst., 3-8 Feb. 58.
(Elektrichestvo, '58, No. 7, 83-86)

KISLINA, A.N.

Changes in the electric strength and microhardness of single crystals
in KCl - KBr solid solutions in the process of natural aging. Izv.
TPI 95:126-133 '58. (MIRA 14:9)

1. Predstavleno prof., doktorom A.A.Vorob'yevym.
(Potassium halides)

KISLINA, A.N.

X-ray diffraction study of single crystals in solid solutions of
alkali metal halides. Izv. TPI 95:134-138 '58. (MIRA 14:9)
(Alkali metal halides) (X-ray crystallography)

KISLINA, A.N.

Effect of annealing of crystals of solid solutions of potassium chloride - potassium bromide on the heat of formation, electric strength and microhardness. Izv. TPI 95:139-145 '58. (MIRA 14:9)
(Potassium halides)

KISLINA, A.N.

Refraction index of single crystals of solid solutions of alkali metal halides and its variation with aging of the solutions. Izv. TPI 95:234-241 '58. (MIRA 14:9)

1. Predstavleno professorom doktorom A.A.Vorob'yevym.
(Solutions, Solid) (Alkali metal halides)

VOROB'YEV, A.A.; KISLINA, A.N.

Electric strength of single crystals in solid solutions of alkali
metal halides. Izv. TPI 95:343-346. '58. (MIRA 14:9)
(Solutions, Solid) (Alkali metal halides--Electric properties)

66196

SOV/143-59-7-6/20

24(8) 24-7500

AUTHORS:

Vorob'yev, A.A., Doctor of Physical and Mathematical Sciences, Professor, and Kislina, A.N., Candidate of Technical Sciences

TITLE:

The Electric Strength and Microhardness of Solid Solution Crystals of Systems KJ-KCl and KCl-NaCl, Disintegrating During the Growing Process from the Melt

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy, Energetika, 1959, Nr 7, pp 41-42 (USSR)

ABSTRACT:

Studying the properties of ionic solid solutions and obtaining stable systems is of great importance for the theory and practical application of dielectrics. Academician N.S. Kurnakov showed that ionic solid solutions are not stable and disintegrate after some time. For checking the influence of the disintegration of solid solutions on their physical and chemical properties, systems KJ-KCl and KCl-NaCl were investigated. Measurements of the electric strength, the microhardness and structural X-ray analyses were performed. Solid solutions of systems KJ-KCl and KCl-NaCl are characterized by a low thermodynamic stability. The

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SOV/143-59-7-6/20

The Electric Strength and Microhardness of Solid Solution Crystals of Systems
KJ-KCl and KCl-NaCl, Disintegrating During the Growing Process from the Melt

microhardness was measured by a PMT-3 device. The dependence of the microhardness of KJ-KCl and KCl-NaCl crystals is of a complicated nature, as shown in fig.2. The dependence of the electric strength of KJ-KCl crystals on their chemical composition is shown in fig.3. The authors established that the disintegration of solid solutions leads to changes of the electric strength, the microhardness, the loss angle $\text{tg } \delta$, and their properties approach those of mechanical mixtures, as indicated by Academician N.S. Kurnakov for some other properties. This paper was presented at the Kafedra tekhniki vysokikh napryazheniy (Department of High Voltage Engineering). There are 3 graphs and 3 Soviet references.

Card 2/2

ASSOCIATION: Tomskiy ordena Trudovogo Krasnogo Znameni politekhnicheskiy institut imeni S.M. Kirova (Tomsk - Order of the Red Labor Banner - Polytechnic Institute imeni S.M. Kirov)

SUBMITTED: January 20, 1959

LX

66170

SOV/143-59-9-7/22

~~5(0), 24(3)~~ 24.7500

AUTHORS: Vorob'yev, A.A., Doctor of Physical and Mathematical Sciences, Professor,
Ivankina, M.S., Kislina, A.N., Candidate of Technical Sciences, and
Savintsev, P.A., Candidate of Physical and Mathematical Sciences,
Docent

TITLE: The Physical and Chemical Properties of Insulating Crystals

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Energetika, 1959, Nr 9,
pp 43-47 (USSR)

ABSTRACT: During the years of Soviet rule, the scientists of Tomsk performed considerable research in studying the structures mechanical, thermal and electrical properties of ion crystals and alloys. The energy of the crystal lattice was selected as the magnitude which determines the structure and the interaction of particles in a crystal lattice, A.A. Vorob'yev (Ref.1). The values of the crystal lattice energy are unknown for crystals with admixtures. P.A. Savintsev (Ref.2) showed that the comparison of properties of crystals and alloys with identical type of the crystal lattice and identical chemical bonds between the particles may be performed

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by the molecular concentration α : $\alpha = \frac{D}{M} \cdot 10^3$ where D = crystal density; M = molecular weight. According to the Born formula, α is connected with the crystal lattice energy $U = C \sqrt{\frac{D}{M}}$ where C

is a constant. According to Born's formula, the energy of alkali halides is proportional to the ratio D/M . The authors compare the properties of crystals and alloys with the lattice energy and the molecule concentration. The Tomsk scientists devoted great attention to studies of the mechanical properties of ion crystals. V.D. Kuznetsov (Ref.3) analyzed methods of determining the hardness of brittle bodies and developed a number of new methods: drilling, damped oscillations, mutual grinding. V.N. Kashcheyev (Ref.4) and L.A. Kudryavtseva (Refs.5,6) showed that the hardness in the method of mutual grinding does not depend on the type of the abrasive powder used for grinding, only when the mechanical strength of the powder is several times greater than the strength of crystals to be ground. In this case the hardness ratio coincides with the ratios of surface energies calculated by Born and Shtern. ✓

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P.A. Savintsev, V.Ya. Zlenko and A.F. Naumov (Ref.7) determined the hardness in drilling of alkali halide monocrystals with admixtures. They found that admixtures of alkali halide salts reduce the hardness of crystals. P.A. Savintsev and V.V. Kutsepalenko (Refs.8,10) stated that the greatest hardness value is found in the area of equal component concentrations, which corresponds to the smallest value of α . M.S. Ivankina (Refs.12,13,14) investigated the structure of the crystal lattice of solid solutions of alkali halide salts and a number of their thermal properties depending upon the composition in connection with the energy of interaction of components. A.A. Vorob'yev, Ye.K. Zavadotskaya and A.M. Trubitsin (Ref.16) and K.A. Vodop'yanov and G.I. Galibina (Ref.23) determined the electrical properties of ion alloys of different stability degrees at room temperature. A.N. Kislina (Refs.19,20,21) investigated the electric strenght of KJ-KBr, KJ-NaJ and other properties of alkali halides. The authors present the following conclusions: The physical and chemical properties of ion crystals and their solid solutions are determined by the crys-

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tal lattice energies. The formation of alkali halide solid solutions KCl-NaCl, NaCl-NaBr, NaCl-NaJ, are accompanied by a destruction of the crystal lattice, absorption of heat, increased linear expansion coefficient, increased electric conductivity, a reduction of the density and molecule concentration, and a hardness reduction in mutual grinding and drilling. The aging of solid solutions will result. There are 2 sets of graphs and 24 Soviet references.

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